3.3 Fisheries Background

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Fisheries Resources Division
Southwest Fisheries Science Center

July 28, 2014

3.3 Fisheries Background

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- Brief overview of National Standards 1 and 2

- Coastal Pelagic Species
- Groundfish complexes
- North Pacific Highly Migratory Species

- Fisheries basics (relevant economic, ecological and societal significance)

- SWFSC role in assessment and monitoring

3.3 Fisheries Background

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Theme I: Scientific and Technical Process

- Does the Center apply a suitable scientific/technical approach to fishery stock assessment modeling?

3.3 Fisheries Background

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Brief overview of National Standards 1 and 2

N.S. Guidelines: ***What do they Say?***

1) Achieve OY and prevent overfishing

2) Best available scientific information

3) Manage stocks as a unit

4) Allocations fair and equitable, promote conservation, and prevent excessive shares

5) Consider efficiency in utilization; not have economic allocation as sole purpose

6) Allow for variations and contingencies

7) Minimize costs, avoid duplication

8) Consider fishing communities to provide for their sustained participation and to minimize adverse economic impacts

9) Minimize bycatch, and bycatch mortality

10) Promote safety of human life at sea

3.3 Fisheries Background

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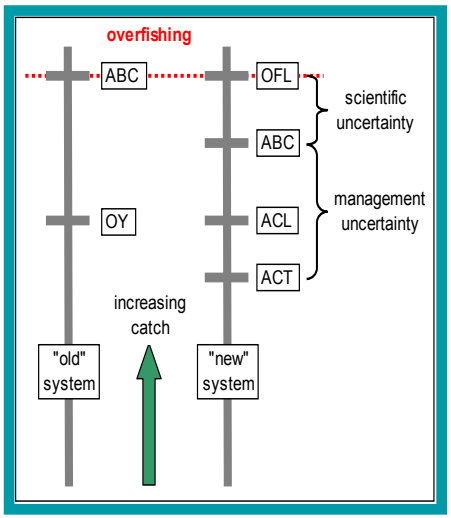
- National Standard 1 Goal:
  Is to achieve Optimal Yield and prevent Overfishing

OY = provides greatest overall benefit to the Nation

- With respect to: Food, recreation, marine ecosystems
- Based on MSY, as reduced by: Social, economic, or ecological factors
- Consistent with Rebuilding



Maximum Sustainable Yield (MSY)

- Largest long-term average yield
- Under prevailing ecological conditions

Overfishing

- Rate of fishing mortality
- Jeopardizes long-term ability to produce MSY

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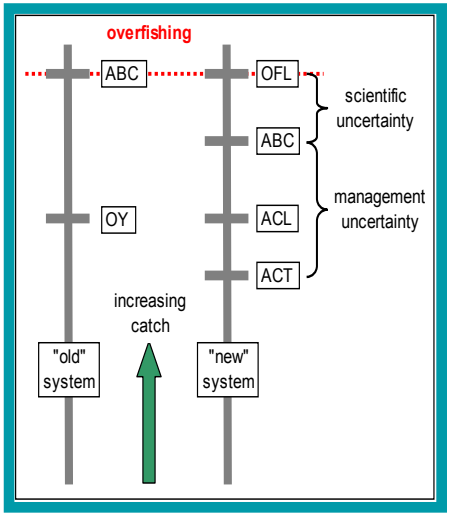
National Standard 2 Goal:

To Provide Best Available Scientific Information

"**Best Available**" may be incomplete or allow conflicting interpretations



Councils need to justify choices/decisions

What to do with new data

SAFE Report (Stock Assessment Fishery Evaluation)

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Species in the CPS Fishery Management Plan and SWFSC responsibilities:

Actively Managed Species

- Pacific Sardine - Assessed annually
- Pacific Mackerel – Previously assessed annually moving to every 4 years (2015, 2019) June 2014 PFMC

Monitored Species – Low fishing pressure, rotating assessment schedule

- Jack Mackerel
- Northern Anchovy , Northern Subpopulation
- Northern Anchovy, Central Subpopulation
- Market Squid - CA State Managed Fishery, Large fishery but falls out of full MSA management consideration due to <1 year life-span

Prohibited Species

- Krill – Prohibited fishery

Ecosystem Component Species – Pacific Herring, Jacksmelt – Monitored for by-catch in CPS fisheries

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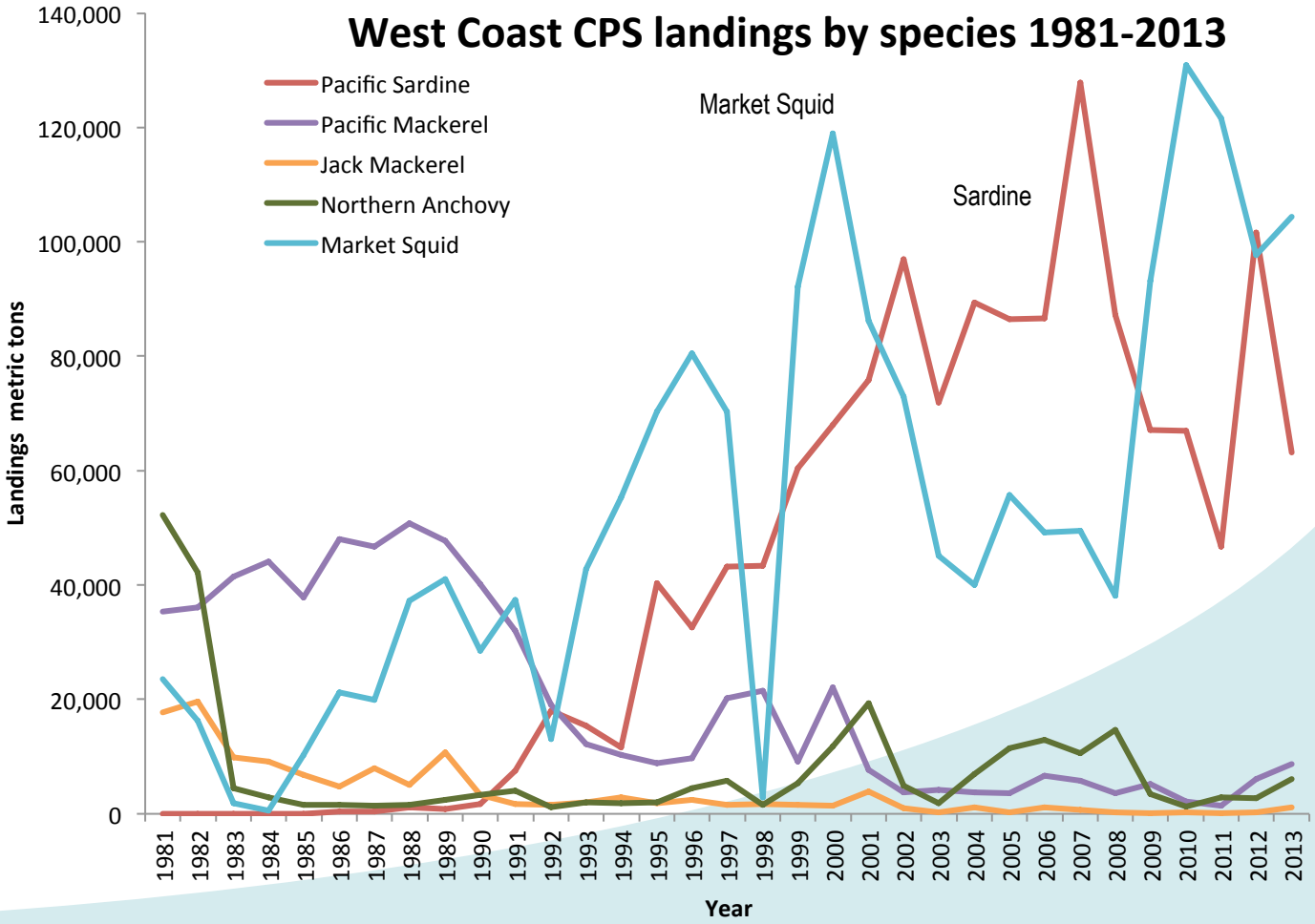
Species in the CPS Fishery Management Plan and the SWFSC responsibilities:



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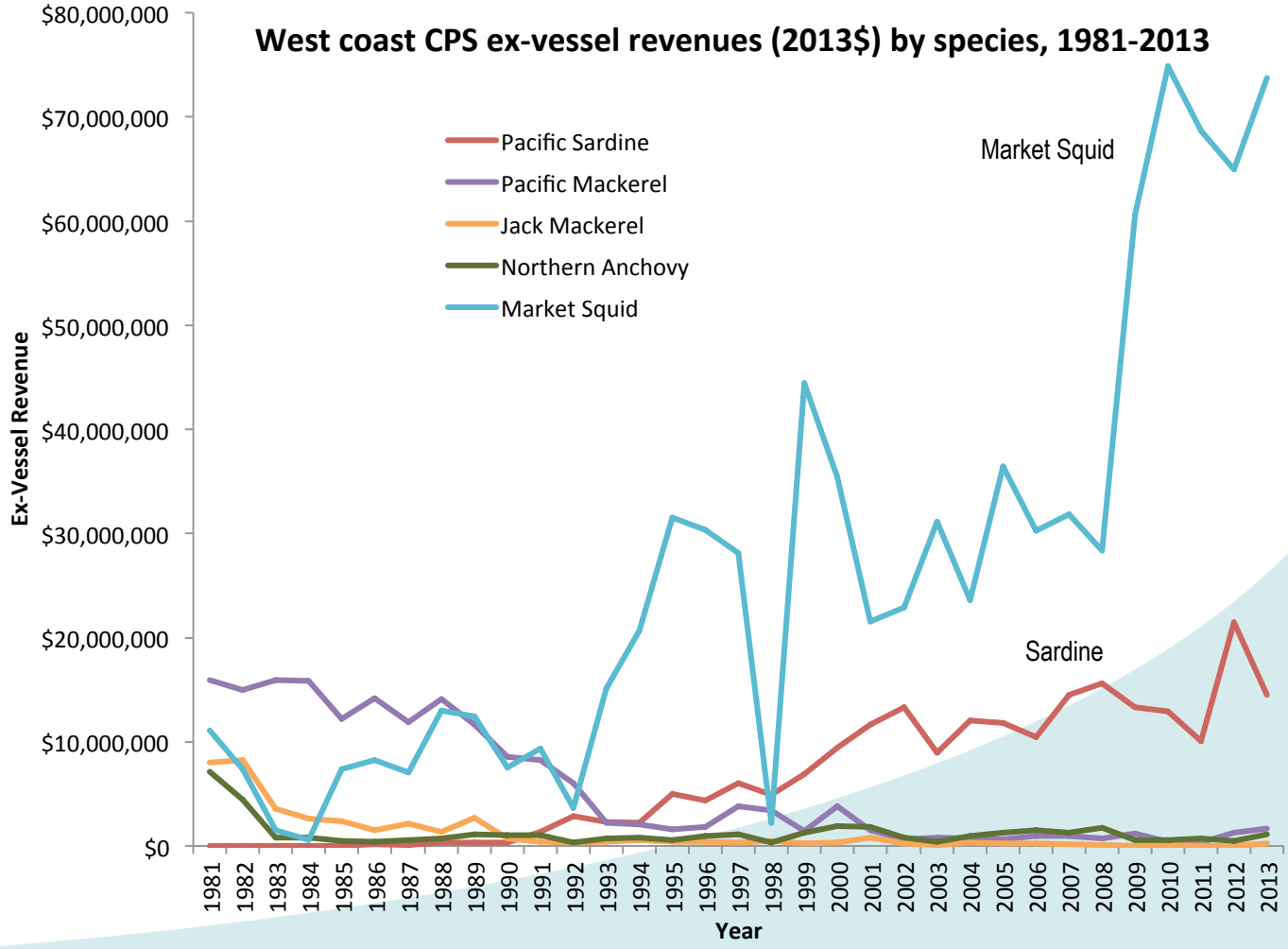
Species in the CPS Fishery Management Plan and the SWFSC responsibilities:



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Species in the Groundfish FMP and SWFSC responsibilities:

The PFMC's groundfish FMP includes over 90 different species:

- **Rockfish.** The plan covers over 64 different species of rockfish, including widow, yellowtail, canary, and vermilion rockfish; bocaccio, chilipepper, cowcod, yelloweye, thornyheads, and Pacific ocean perch.
- **Flatfish.** The plan covers 12 species of flatfish, including petrale sole, Dover sole, starry flounder, arrowtooth flounder, and Pacific sanddab.
- **Roundfish.** The six species of roundfish included in the fishery management plan are lingcod, cabezon, kelp greenling, Pacific cod, Pacific whiting (hake), and sablefish.
- **Sharks and skates.** The six species of sharks and skates are leopard shark, soupfin shark, spiny dogfish, big skate, California skate, and longnose skate.
- **Other species.** These include ratfish, finescale codling, and Pacific rattail grenadier.

Species in the Groundfish FMP and SWFSC responsibilities:

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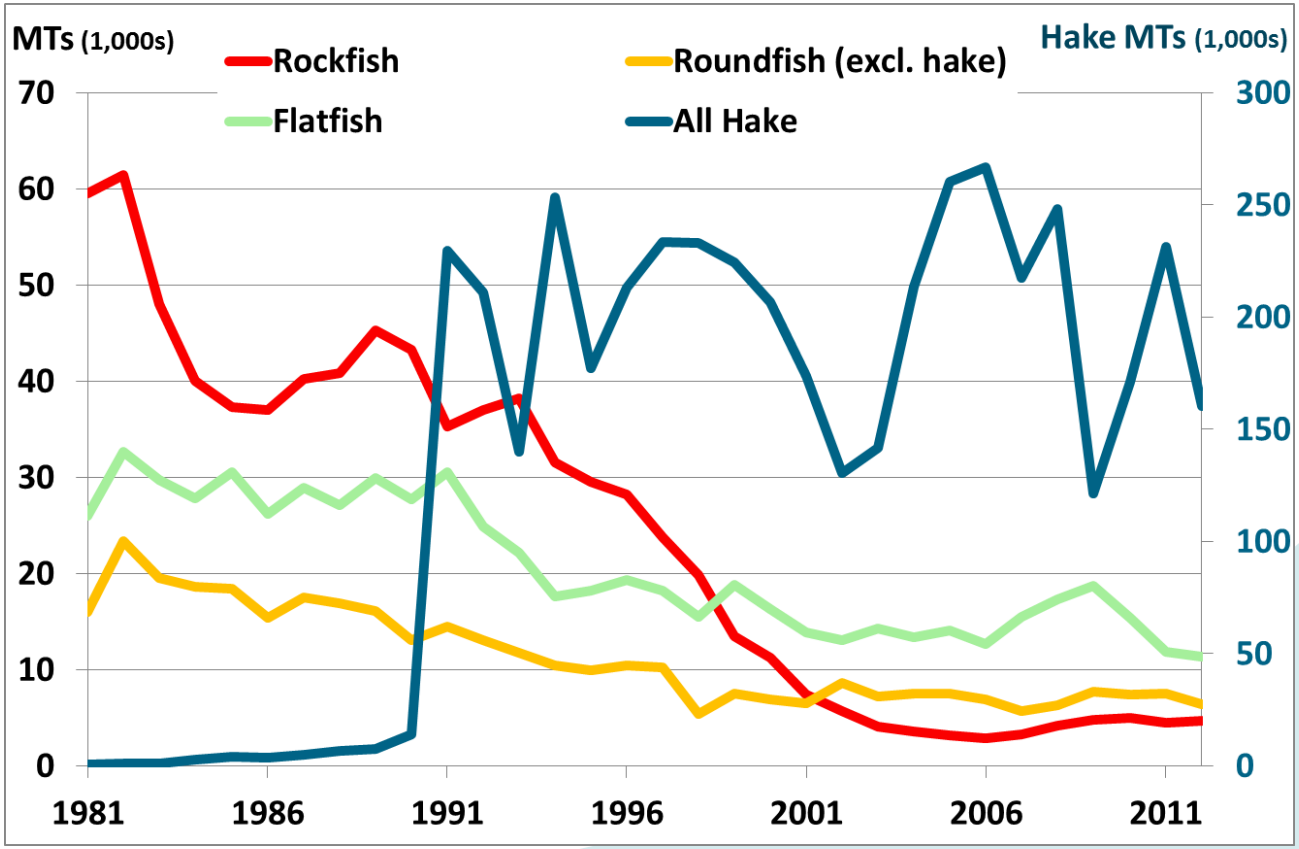
West Coast Commercial Groundfish landings 1981-2012



Species in the Groundfish FMP and SWFSC responsibilities:

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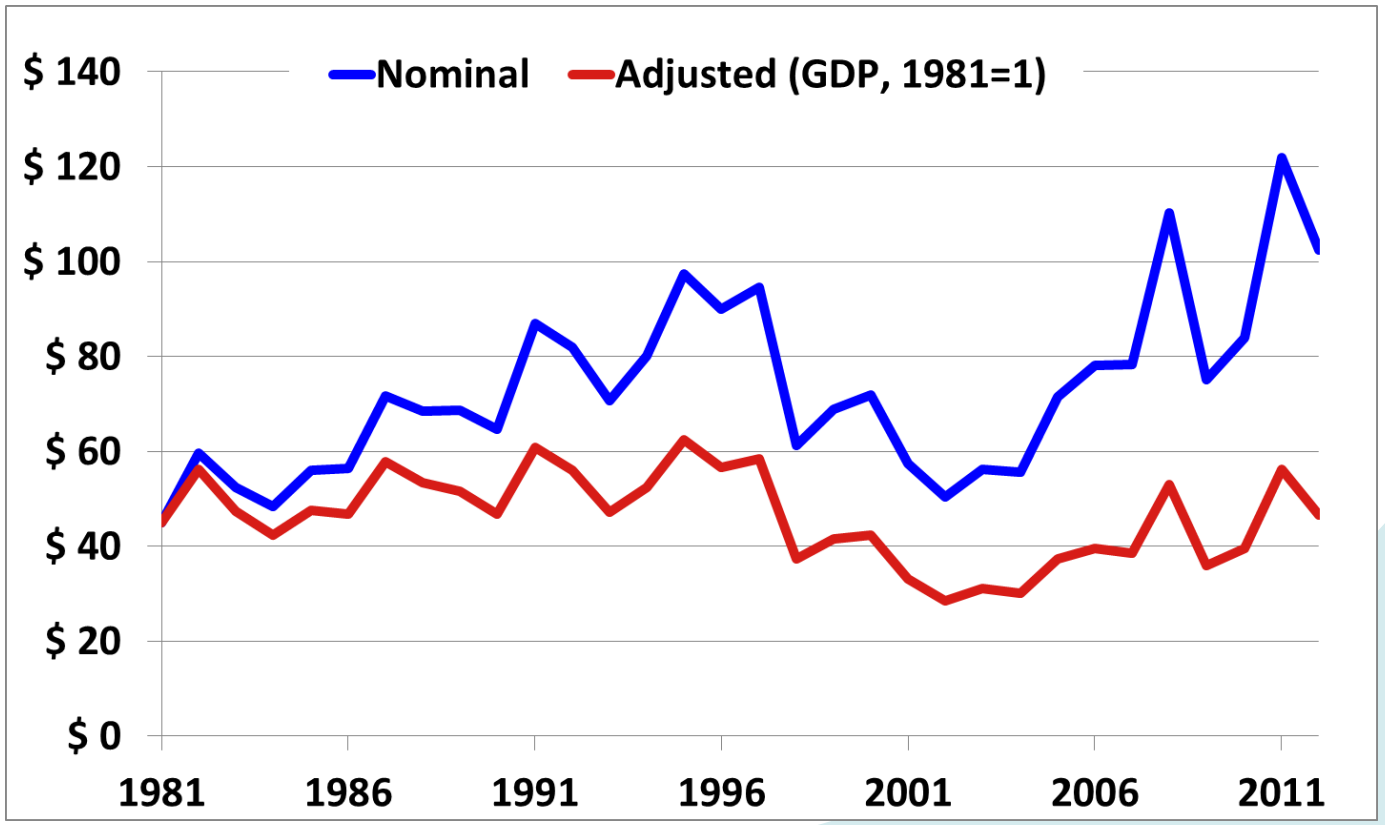
West Coast commercial groundfish ex-vessel revenues ($millions) 1981-2012



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Species in the HMS FMP and SWFSC responsibilities:

North Pacific albacore

Yellowfin tuna

Bigeye tuna

Skipjack tuna

Pacific bluefin tuna

Striped marlin

Swordfish

Common thresher shark

Shortfin mako shark (bonito shark)

Blue shark

Dorado, a.k.a. mahi mahi or dolphinfish

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Species in the HMS FMP and SWFSC responsibilities:

In addition, Amendment 2 added eight EC species to the FMP. The EC category is identified in the revised National Standard 1 Guidelines.

Bigeye thresher shark

Common mola

Escolar

Lancetfishes

Louvar

Pelagic sting ray

Pelagic thresher shark

Wahoo

Under the FMP, white sharks, megamouth sharks, and basking sharks are prohibited species.

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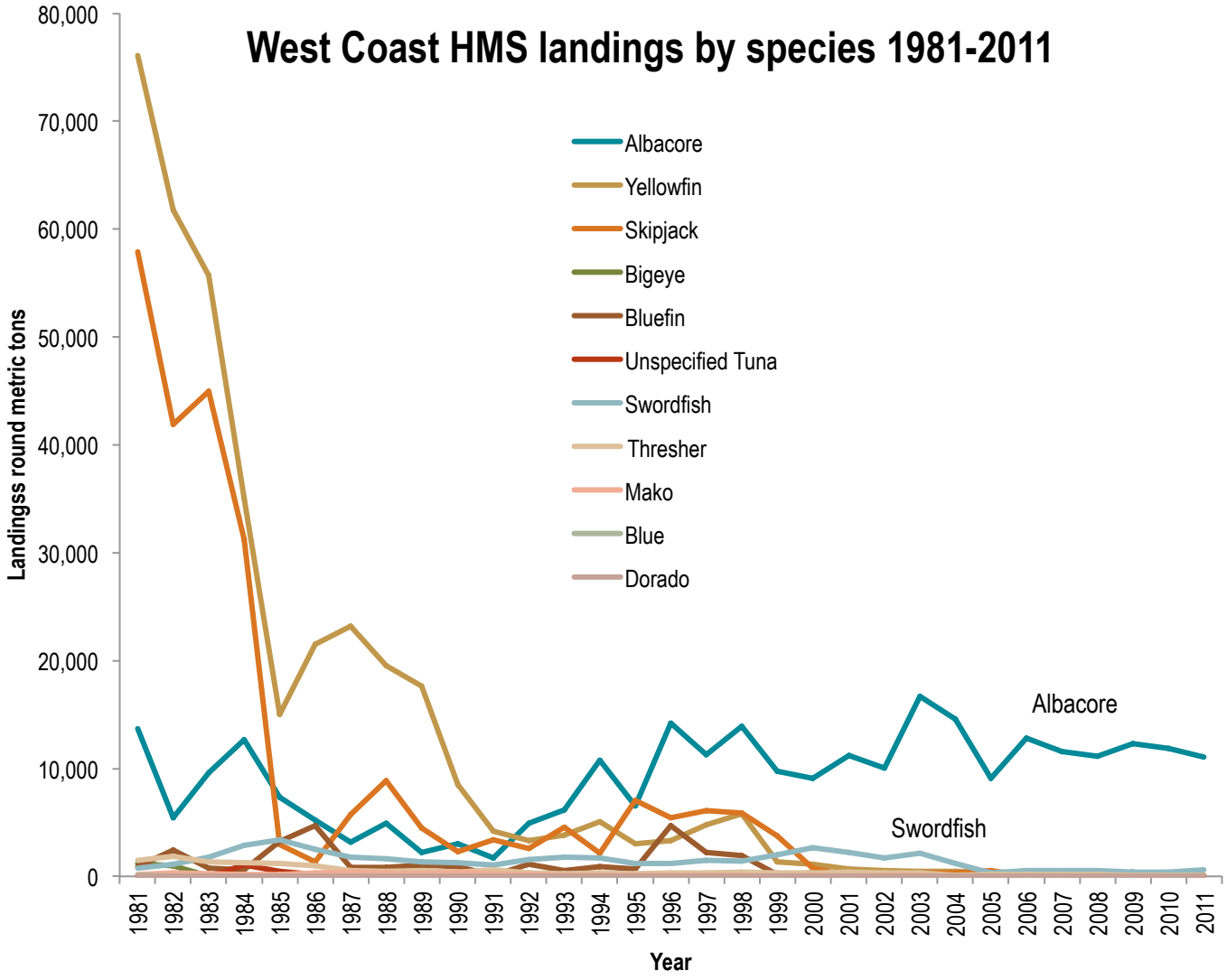
Species in the HMS FMP and SWFSC responsibilities:



Species in the HMS FMP and SWFSC responsibilities:

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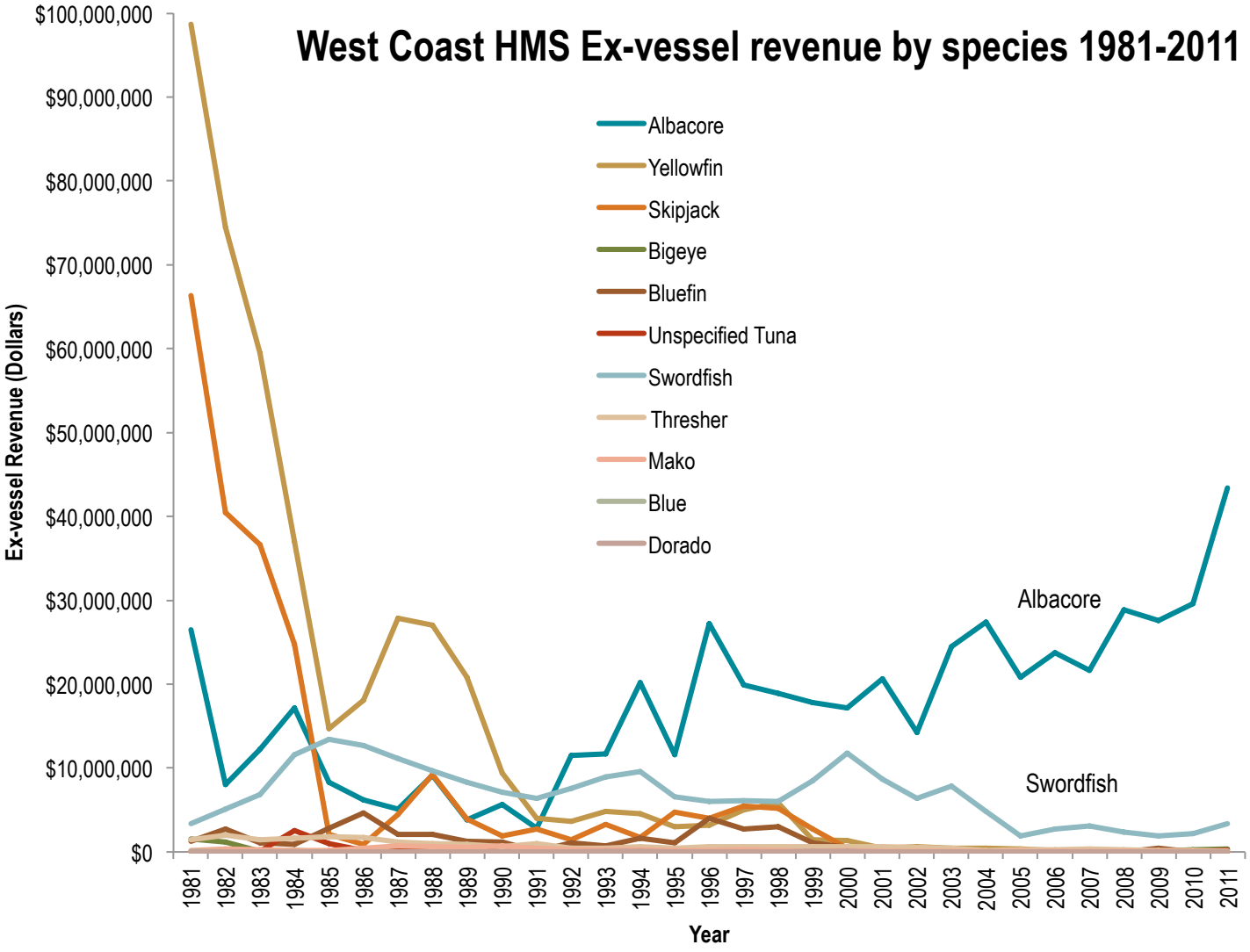
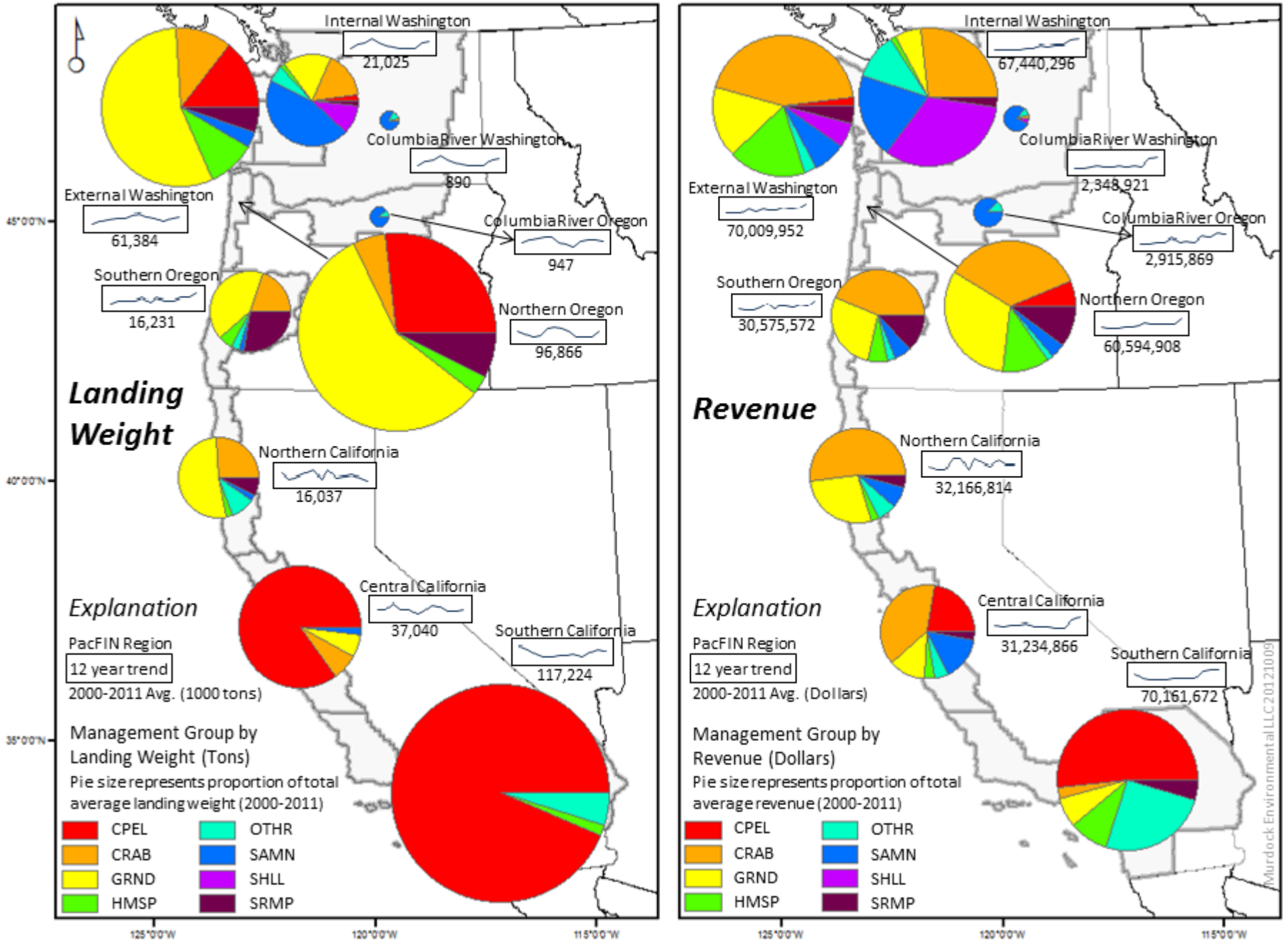
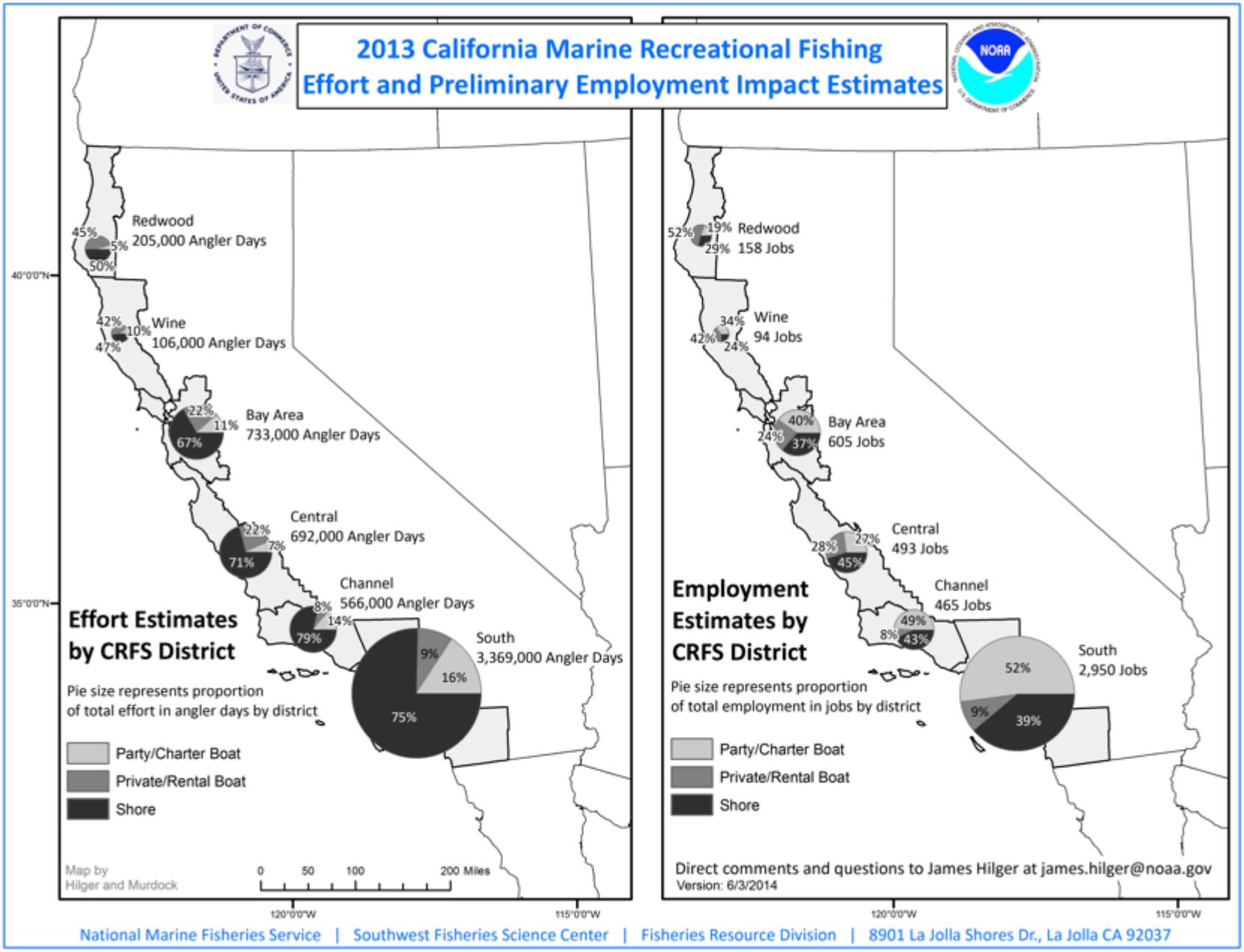



Internal Washington
21,025
ColumbiaRiver Washington
890
External Washington
61,384
ColumbiaRiver Oregon
947
Southern Oregon
16,231
Northern Oregon
96,866
Landing Weight
Northern California
16,037
Central California
37,040
Southern California
117,224
Explanation
PacFIN Region
12 year trend
2000-2011 Avg. (1000 tons)
Management Group by Landing Weight (Tons)
Pie size represents proportion of total average landing weight (2000-2011)
CPEL
CRAB
GRND
HMSP
OTHR
SAMN
SHLL
SRMP
45°0'0"N
40°0'0"N
35°0'0"N
125°0'0"W
120°0'0"W
115°0'0"W
Internal Washington
67,440,296
ColumbiaRiver Washington
2,348,921
External Washington
70,009,952
ColumbiaRiver Oregon
2,915,869
Southern Oregon
30,575,572
Northern Oregon
60,594,908
Revenue
Northern California
32,166,814
Central California
31,234,866
Southern California
70,161,672
Explanation
PacFIN Region
12 year trend
2000-2011 Avg. (Dollars)
Management Group by Revenue (Dollars)
Pie size represents proportion of total average revenue (2000-2011)
CPEL
CRAB
GRND
HMSP
OTHR
SAMN
SHLL
SRMP
125°0'0"W
120°0'0"W
115°0'0"W
Murdock Environmental LLC 20121009


2013 California Marine Recreational Fishing
Effort and Preliminary Employment Impact Estimates
Redwood
205,000 Angler Days
45%
5%
50%
Wine
106,000 Angler Days
42%
10%
47%
Bay Area
733,000 Angler Days
22%
11%
67%
Central
692,000 Angler Days
22%
7%
71%
Channel
566,000 Angler Days
8%
14%
79%
South
3,369,000 Angler Days
9%
16%
75%
Effort Estimates
by CRFS District
Pie size represents proportion
of total effort in angler days by district
Party/Charter Boat
Private/Rental Boat
Shore
Map by
Hilger and Murdock
0 50 100 200 Miles
40°0'0"N
35°0'0"N
120°0'0"W
115°0'0"W
Redwood
158 Jobs
52%
19%
29%
Wine
94 Jobs
34%
42%
24%
Bay Area
605 Jobs
40%
24%
37%
Central
493 Jobs
28%
27%
45%
Channel
465 Jobs
49%
8%
43%
South
2,950 Jobs
52%
9%
39%
Employment
Estimates by
CRFS District
Pie size represents proportion
of total employment in jobs by district
Party/Charter Boat
Private/Rental Boat
Shore
Direct comments and questions to James Hilger at james.hilger@noaa.gov
Version: 6/3/2014
National Marine Fisheries Service | Southwest Fisheries Science Center | Fisheries Resource Division | 8901 La Jolla Shores Dr., La Jolla CA 92037

West Coast fishery management and SWFSC responsibilities:

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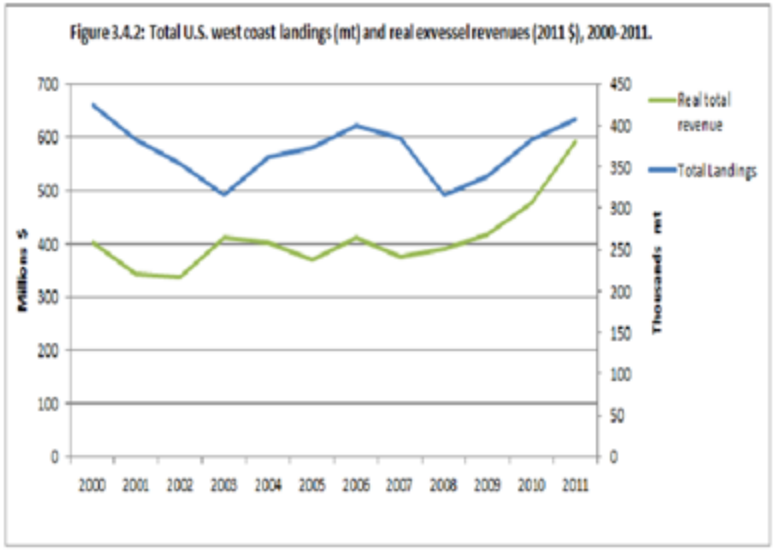
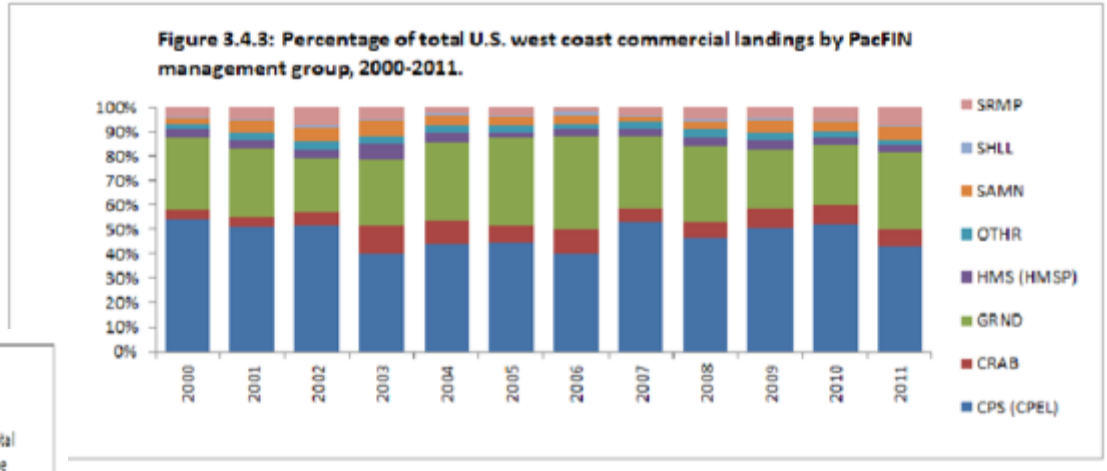
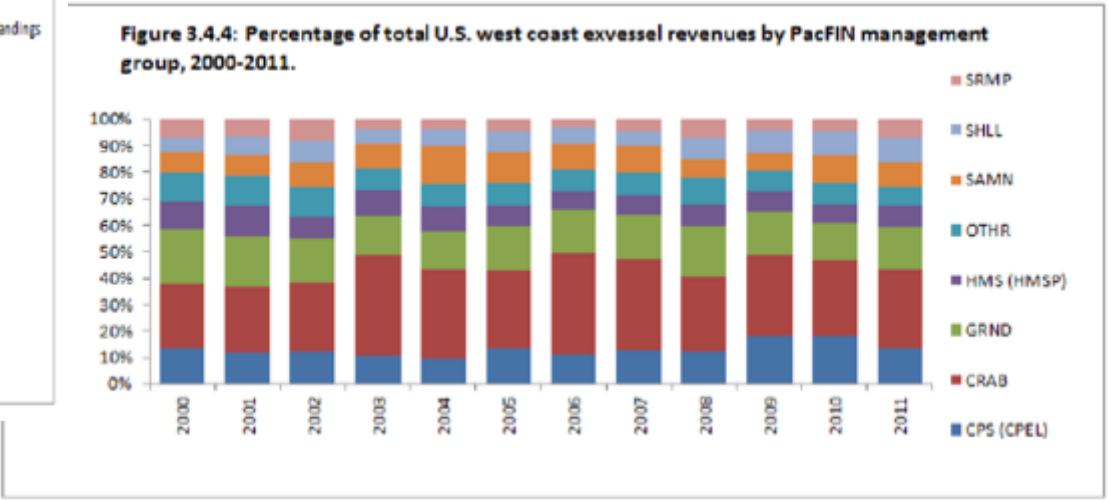
Pacific Coast Fishery Ecosystem Plan, 2013 PFMC







West Coast fishery management and SWFSC responsibilities:

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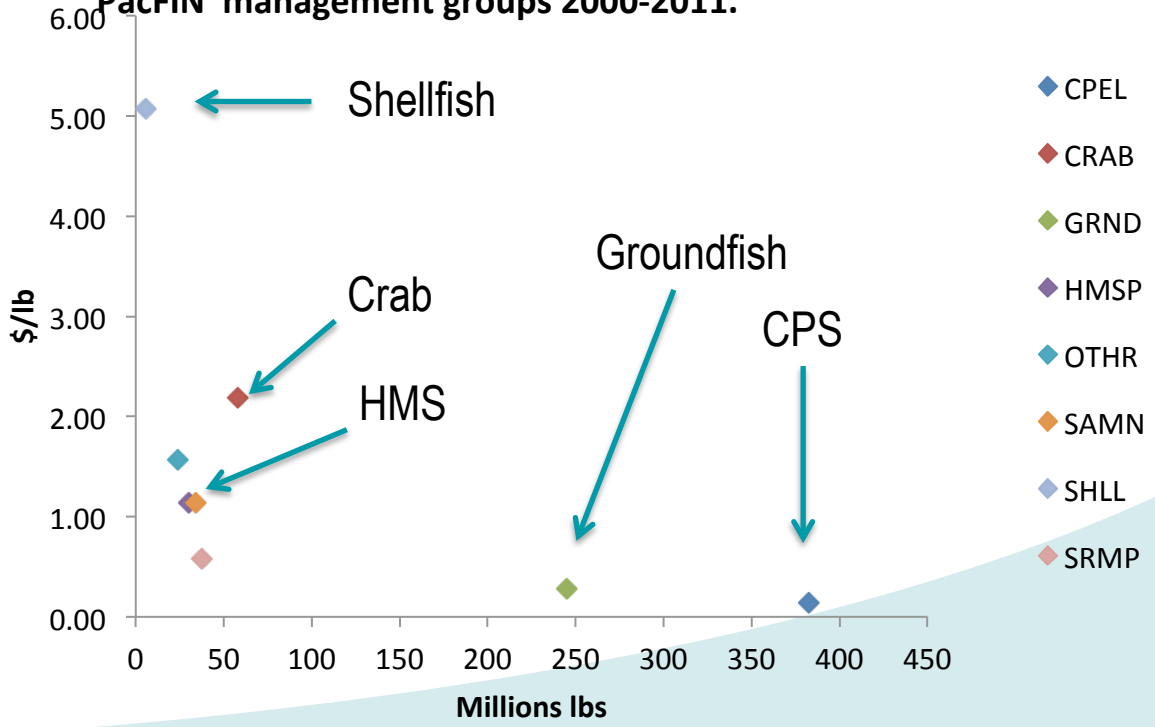
Pacific Coast Fishery Ecosystem Plan, 2013 PFMC

Figure 4.9. Average ex-vessel price ($/lb) by average landings (lbs) for PacFIN management groups 2000-2011.



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A Brief History of the West Coast Sardine Fishery:

- The Pacific Sardine (*Sardinops sagax caerulea*) fishery was the largest in North America in the 1930s and 1940s with peak landings of over 700,000 metric tons in 1936,
- The fishery developed in response to the demand for food during World War I and extended from southern California to British Columbia,
- Sardine were used for either reduction to fishmeal and oil or canned for human consumption with a small portion taken for live bait.

A Brief History of the West Coast Sardine Fishery:

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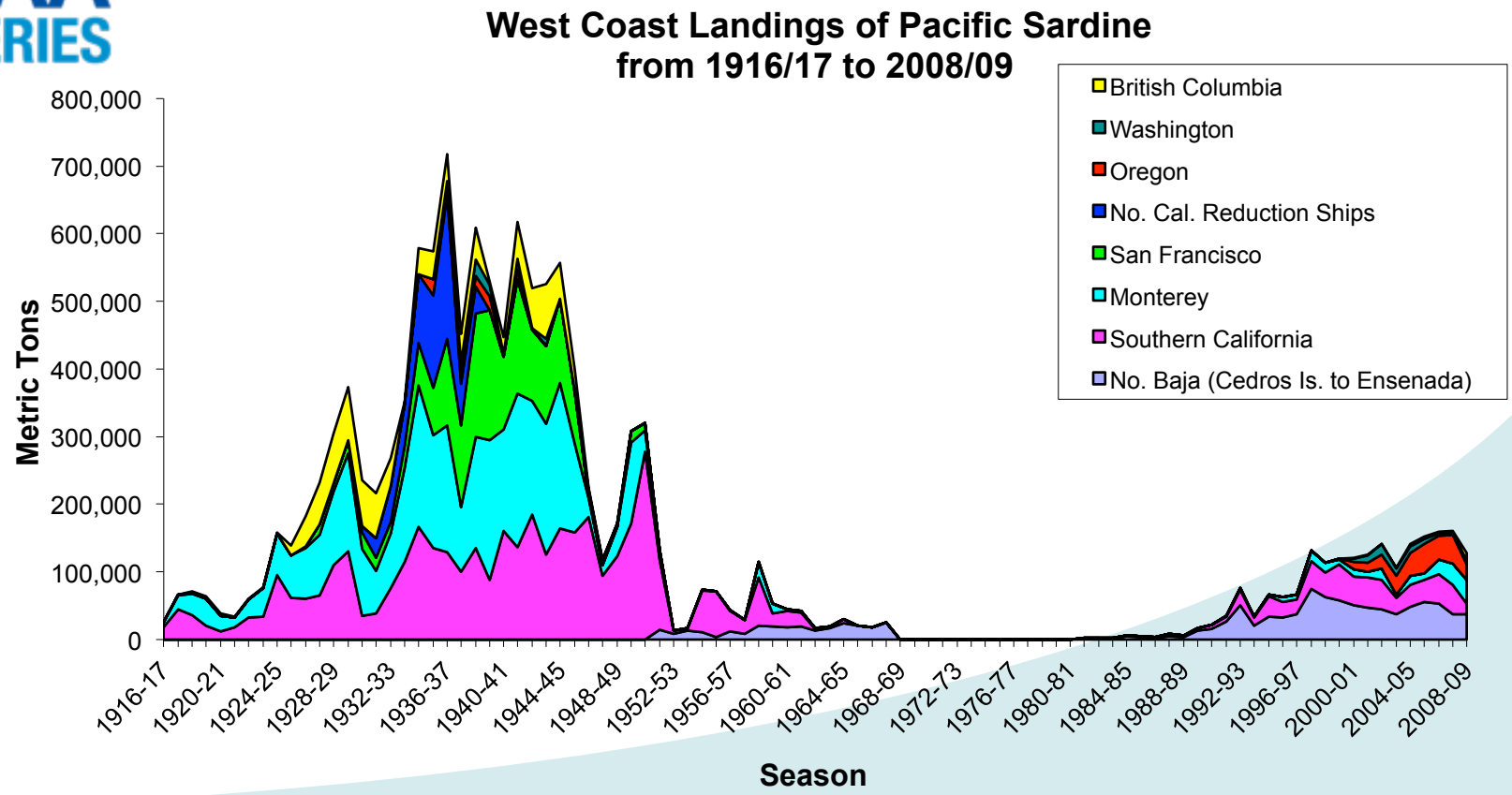

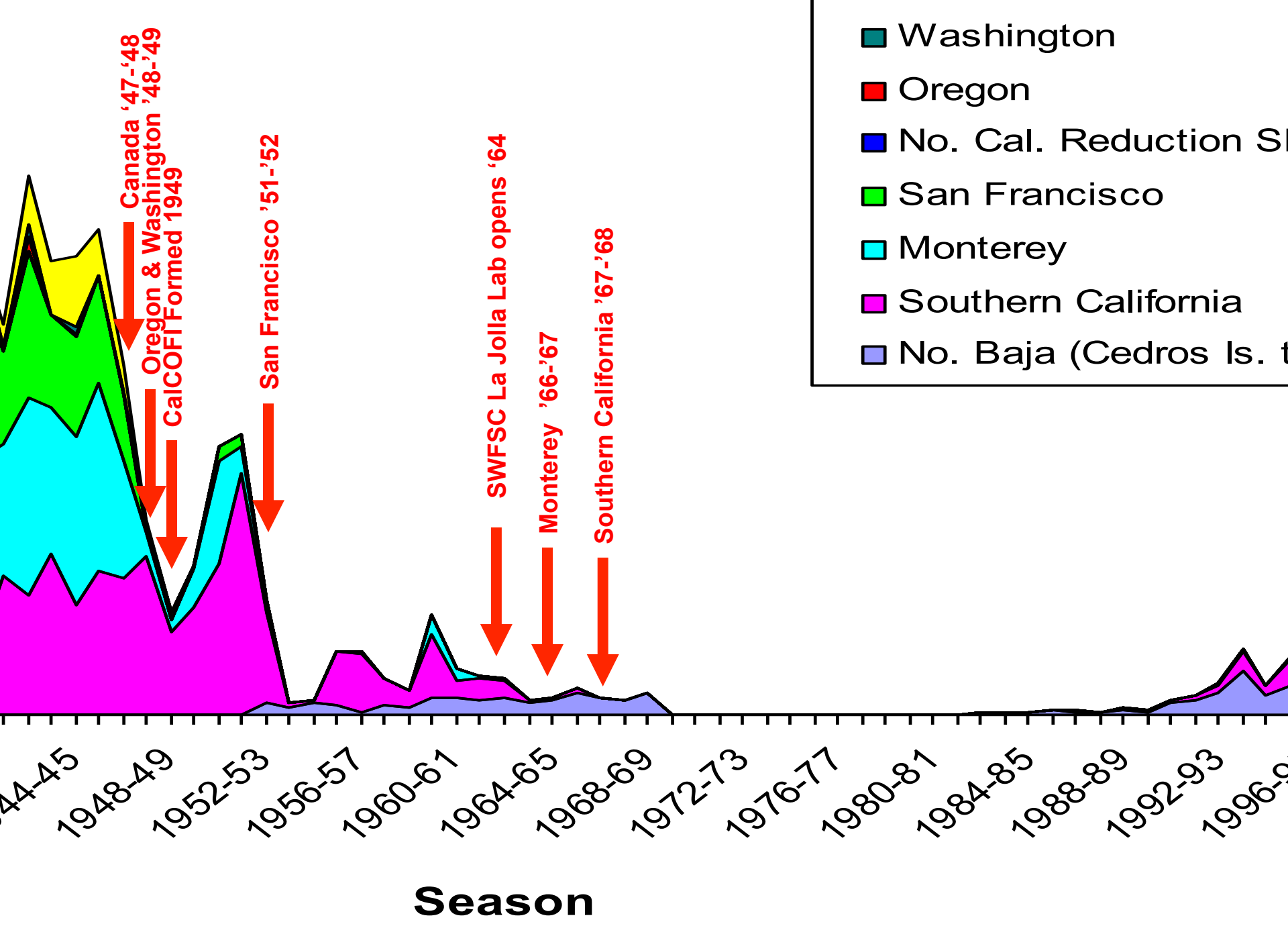
Canada '47-'48
Oregon & Washington '48-'49
CalCOFI Formed 1949
San Francisco '51-'52
SWFSC La Jolla Lab opens '64
Monterey '66-'67
Southern California '67-'68
Washington
Oregon
No. Cal. Reduction Sh
San Francisco
Monterey
Southern California
No. Baja (Cedros Is. t
44-45
1948-49
1952-53
1956-57
1960-61
1964-65
1968-69
1972-73
1976-77
1980-81
1984-85
1988-89
1992-93
Season

A Brief History of the West Coast Sardine Fishery:

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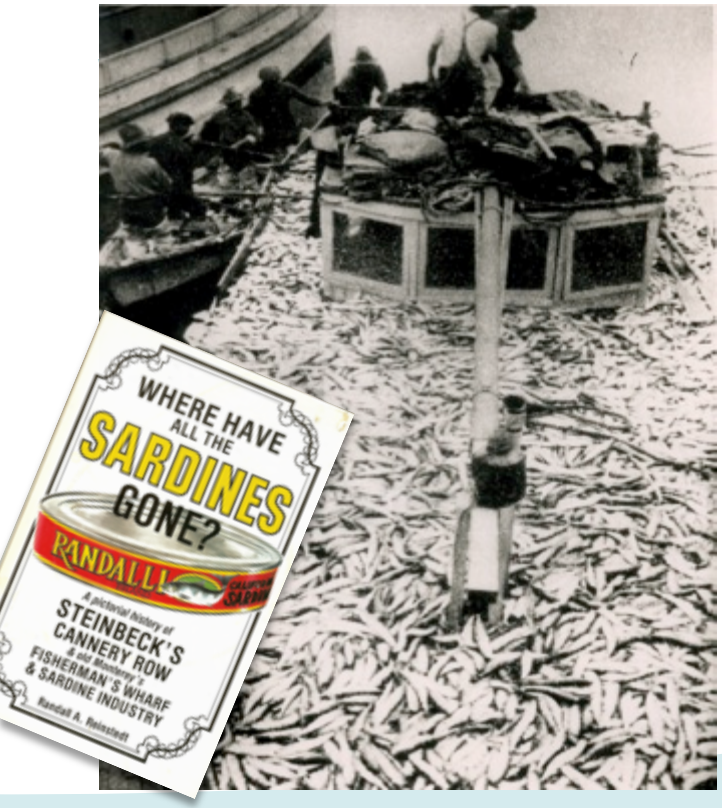

- In 1967, after approximately fifty years of fishing, a moratorium on fishing was imposed by the California Legislature,
- By the time the moratorium was imposed, most of the fisheries along the West Coast had collapsed, even in southern California,
- The recession of landings started from the north and moved southward.

A Brief History of West Coast Groundfish and HMS Fisheries

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Groundfish

- Rockfish slow growing, can live to over 100 years
- Long history of groundfish landings, diminishing harvest in the 1980s
- First species declared overfished in 1999, led to severe management measures

Highly Migratory Species

- Dramatic decline of West Coast landings due to canneries and large purse seine fishery moving from San Diego/San Pedro to American Samoa
- Tuna-Dolphin issues in 1980s one of the drivers after implementation of the Marine Mammal Protection Act (1972)

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SWFSC role in assessment and monitoring

- SWFSC has a long history of assessment research of CPS from historical sardine collapse
- Operating Agreements between Science Centers (SWFSC-NWFSC, SWFSC-PIFSC) – prioritize which assessments are done by which Center
- 2013 SWFSC Strategic Science Plan highlights the priority placed on assessments:

  Theme 1. Population assessment: *Provide assessments and management advice to rebuild and sustain fisheries, fishing communities, protected species, and their ecosystems*

  Theme 2. Ecosystem analysis: *Assess and predict how environmental changes and human activities affect ecosystems and design and implement new management paradigms to manage fisheries and recover protected species*

  Theme 3. Observations, measurements, and surveys: *Provide information and data to support population assessments and analyses of ecosystem variability and change*

  Theme 4. Technological innovation and development: *Improve ecosystem observations and survey methodologies through a variety of advanced technologies and sensor development*

The National Regulatory Framework

FRD Leadership Roles

California Current LME

Human Consumption

HMS FMP:
albacore
bluefin
swordfish
thresher sharks (3) ★
shortfin mako shark ★
blue shark ★
striped marlin
basking shark ✖
white shark ✖
FRD

Groundfish FMP:
rockfish (64 sp)
flatfish (12 sp)
Hake and other
roundfish (6 sp)
NWFSC & FED

Salmon FMP:
chinook
coho
NWFSC & FED

MMPA: ✖
dolphins
pinnipeds
toothed whales
baleen whales
MMTD

forage species= fished and ecosystem species ✖

CPS FMP:
Pacific sardine ★
market squid
Pacific mackerel
northern anchovy
jack mackerel
krill ✖
FRD

ESA turtles: ✖
leatherback
loggerhead
green
MMTD

ESA Seabirds ✖
Migratory Seabirds
USF&W

✖ =prohibited but assessed

★ =fishery independent surveys

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Strengths

- SWFSC has a long history of fishery assessment research for all fisheries
- Informal exchange of data between scientists, Centers has been good
- Strong working relationship with States who provide fishery dependent data for stock assessments
- Strong relationships with the fishing industry, agency partners, stakeholders

Challenges

- Formal transfer of information between international managers
- Adequate representation in management process, both state and federal due to time commitments
- Continuation of dependent data (i.e., state port sampling programs) especially for monitored species with minimal landings

Strategies for Improvement

- Continue to work with states to maintain dependent sampling programs
- Continue formal process with Mexico (e.g., MexUS-Pacifico) to improve assessments as well as other countries
- SWFSC strives to improve its assessment process, priorities set out in the strategic plan